DU UCL calculations

	Sample ID TE	O Result					
DU1	DU1SU2	379					
501	DU1SU4	1040					
	DU1SU5	1091					
	mean =	837					
	SD =	397					
	%RSD =	47.5%					
	1-sided 95% t-UCL =	1507					
	1-sided 95% Cheb-UCL =	1837 r	า = 3				
	Sample ID TE						
	DU2SU9	195					
DU2	DU2SU10	60					
	DU2SU17	248					
	DU2SU19	610		EPA "splits"			
	DU2SU28	463		DU2 SU28	DF6A0	287	
	DU2SU36	109			DF6A4	331	
use 1st for DU2 SU30	DU2SU30-1	168					
	DU2SU44	129 c	only -1, not ave				
	mean =	248					
	SD =	191					
	%RSD =	77.1%					
	1-sided 95% t-UCL =	376					
	1-sided 95% Cheb-UCL =	542 r	า = 8				
	Sample ID TE	Q Result					
DU3	DU3SU1	453					

DU3SU2

1428

1-sided 95% Cheb-UCL =	3065 n = 2
1-sided 95% t-UCL =	4018
%RSD =	73.3%
SD =	689
mean =	940

	Sampl	le ID	TEQ	Result
--	-------	-------	-----	--------

	1-sided 95% Cheb-UCL =	3015 n = 2
	1-sided 95% t-UCL =	3895
	%RSD =	60.5%
	SD =	637
	mean =	1052
DU4	DU4SU2	602
	DU4SU1 repeat	1502

	Sample ID	TEQ Result
	DU5SU1-1	1777
DU5	DU5SU1-2	1653
	DU5SU1-3	1588
	mean =	1673
	SD =	96
	%RSD =	5.7%
	1-sided 95% t-UCL =	1834
	1-sided 95% Cheb-UCL =	1914 n = 3

EPA "splits" DU5 SU1

DF6A01 1835 DF6A5 1779

	Sample ID	TEQ Result
DU6	DU6SU1-1	1556
	DU6SU2 repeat	3121
	DU6SU3	1771
	mean =	2149
	SD =	848

%RSD = 39.5%

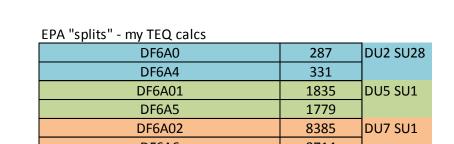
1-sided 95% t-UCL = 3579

1-sided 95% Cheb-UCL = 4284 n = 3

single sample DU7 Sample ID TEQ Result EPA "splits"

DU7SU1-reanalysis 5505 DU7 SU1

DF6A02 8385 DF6A6 8714

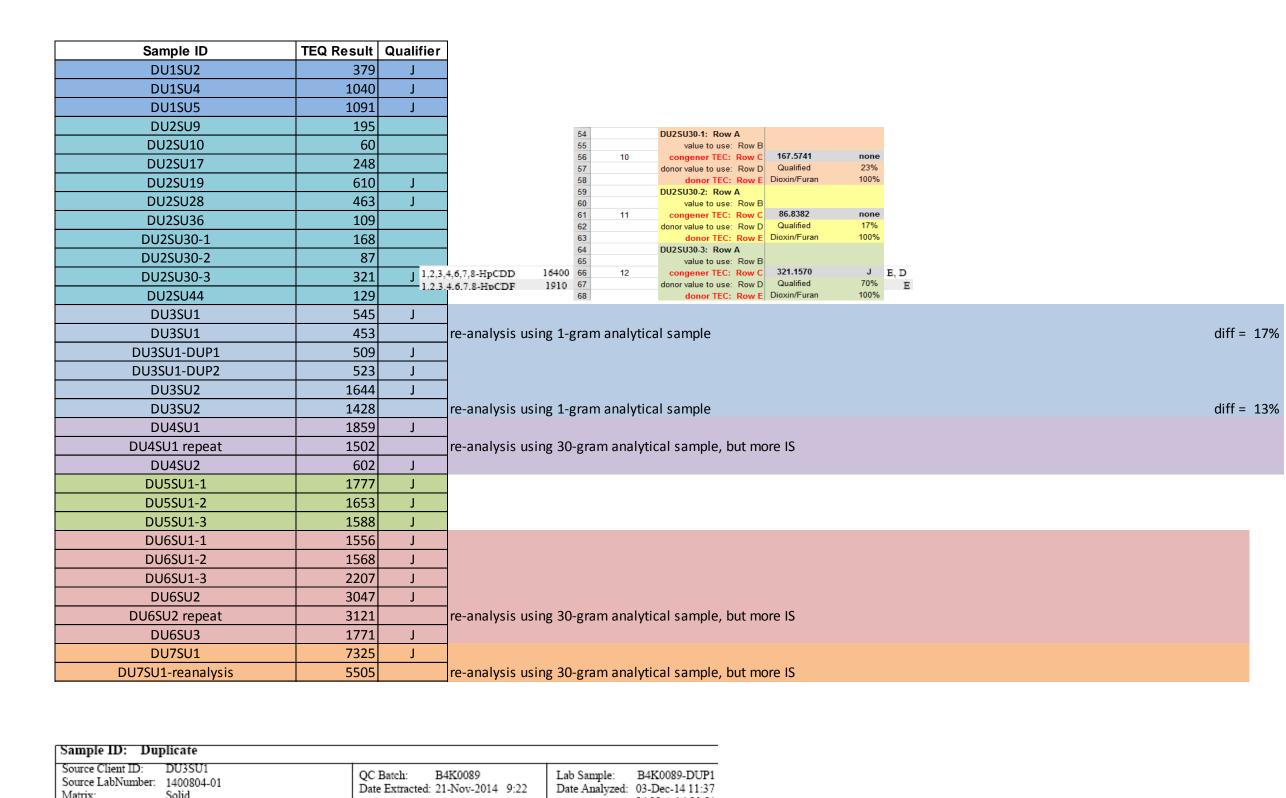


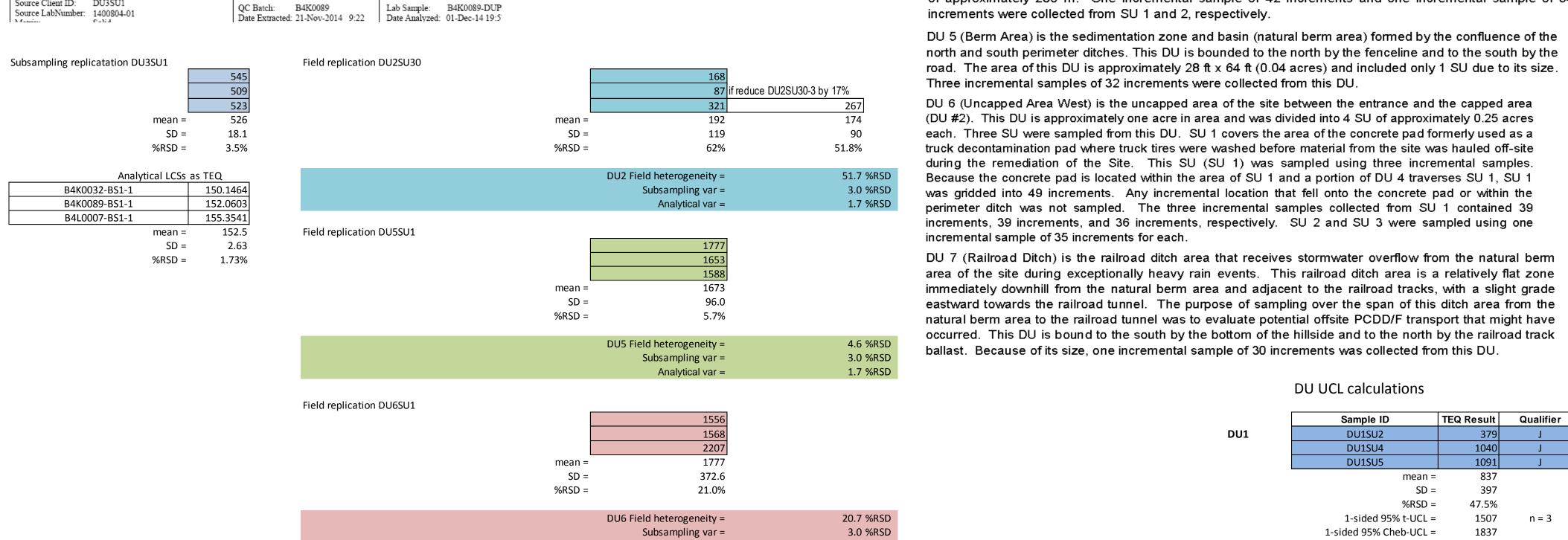
Source LabNumber: 1400804-01

Matrix: Solid Sample Size: 31.0 g

Sample ID: Duplicate

Source Client ID: DU3SU1





24-Nov-14 20:21

the control limits. Second, because of Site geology, the soil samples collected contained a significant fraction of coarse soil material that could not be analyzed due to its large size (particle sizes greater than 2 mm in size), with the samples containing a percentage of these materials ranging from 43 to 82%. These two types of issues required different adjustments to the analytical data before they could be compared to soil screening levels. These adjustments are discussed below.

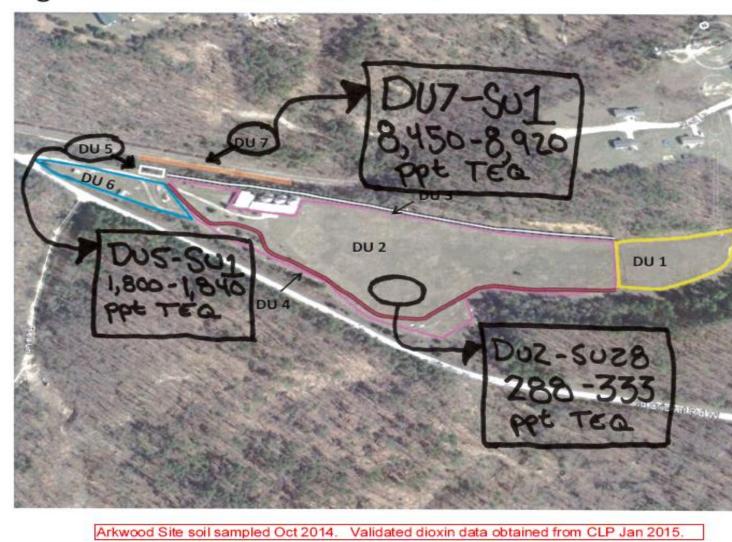
First, to address the issues associated with the samples that had HpCDD and OCDD concentrations greater than the high calibration limit, two samples (DU3SU1 and DU3SU2) were re-analyzed using only 1 g of sample instead of the 30 g required by the ISM methodology.

The results of the re-analysis are presented in Table 1 and the analytical summaries for the re-analyses are included in Attachment A. The TEQ concentrations for these two re-analyzed samples were 11 to 13% lower than the original sample concentrations and were not flagged for having concentrations greater than the high calibration limit. These results indicate that the TEQ concentrations for the samples that had HpCDD and OCDD that were greater than the high calibration limit may be overestimated by 11 – 13%. For the purposes of this evaluation, all of the samples that had HpCDD and OCDD flagged for being greater than the high calibration limit were not adjusted, but the TEQ concentrations for the re-analyzed samples were used instead of the original analyses for samples DU3SU1 and DU3SU2.

samples DU4SU1, DU6SU2, and DU7SU1.

To account for the problems associated with the recoveries of the internal standards being out of control, three samples, DU4SU1, DU6SU2, and DU7SU1, were re-analyzed using 30 g of sample but using five to ten times the amount of internal standard. The results of the re-analysis of these samples are presented in Table 1 and the analytical summaries for the re-analyses are included in Attachment A. The recoveries of the internal standards for these re-analyzed samples are within the control limits. The TEQ concentrations of the re-analyzed samples were within 10 - 25% of the original analysis. Two samples, DU4SU1 and DU7SU1 had TEQ concentrations in the reanalyzed samples that were 19 – 25% lower than the original analysis, while one sample, DU6SU2, had a concentration 10% higher than|the original analysis. The addition of more internal standard resulted in recoveries within control limits, which indicates that taking this step improved the quality of the analysis. For the purposes of this evaluation, the TEQ concentrations for the re-analyzed samples were used instead of the original analyses for





DU 1 (Uncappped Area East) is the uncapped eastern section of the Site where no treated wood storage or processing activities were conducted based on available information. This DU is approximately 1.2 acres in area, and was divided into 5 sampling units (SII) of approximately 0.25 acres each. Incremental samples of 30 DU 2 (Capped Area) is the capped area of the site that covers all of the formerly excavated areas. This DU is the largest DU covering 82% of the site with an area of approximately 11 acres. Because of its size, this DU was divided into 44 SU of approximately 0.25 acres each and eight SU of the 44 were selected for sampling. Single incremental samples of 30 increments each were collected from SU 9, 10, 17, 19, 28, 36, and 44 while three incremental samples of 30 increments each were collected from SU 30. DU 3 is the northern perimeter ditch area spanning from the natural berm area on the western side of the Site to the northeastem-most perimeter adjacent to a formerly excavated and capped area. This DU is approximately 0.14 acres in area and 467 m in length. This DU was divided in half lengthwise into two SU of approximately 233 m. One incremental sample of 40 increments and one incremental sample of 41

increments were collected from SU 1 and 2, respectively. DU 4 is the southern perimeter ditch area that also spans from the natural berm area on the western side of the Site to the southeastern-most perimeter adjacent to a formerly excavated and capped area. This DU is approximately 0.17 acres in area and 560 m in length. This DU was divided in half lengthwise into two SU of approximately 280 m. One incremental sample of 42 increments and one incremental sample of 54 increments were collected from SU 1 and 2, respectively.

north and south perimeter ditches. This DU is bounded to the north by the fenceline and to the south by the road. The area of this DU is approximately 28 ft x 64 ft (0.04 acres) and included only 1 SU due to its size. Three incremental samples of 32 increments were collected from this DU. DU 6 (Uncapped Area West) is the uncapped area of the site between the entrance and the capped area (DU #2). This DU is approximately one acre in area and was divided into 4 SU of approximately 0.25 acres each. Three SU were sampled from this DU. SU 1 covers the area of the concrete pad formerly used as a truck decontamination pad where truck tires were washed before material from the site was hauled off-site during the remediation of the Site. This SU (SU 1) was sampled using three incremental samples. Because the concrete pad is located within the area of SU 1 and a portion of DU 4 traverses SU 1, SU 1 was gridded into 49 increments. Any incremental location that fell onto the concrete pad or within the perimeter ditch was not sampled. The three incremental samples collected from SU 1 contained 39 increments, 39 increments, and 36 increments, respectively. SU 2 and SU 3 were sampled using one

DU 7 (Railroad Ditch) is the railroad ditch area that receives stormwater overflow from the natural berm area of the site during exceptionally heavy rain events. This railroad ditch area is a relatively flat zone immediately downhill from the natural berm area and adjacent to the railroad tracks, with a slight grade eastward towards the railroad tunnel. The purpose of sampling over the span of this ditch area from the natural berm area to the railroad tunnel was to evaluate potential offsite PCDD/F transport that might have occurred. This DU is bound to the south by the bottom of the hillside and to the north by the railroad track

ballast. Because of its size, one incremental sample of 30 increments was collected from this DU.

1.7 %RSD

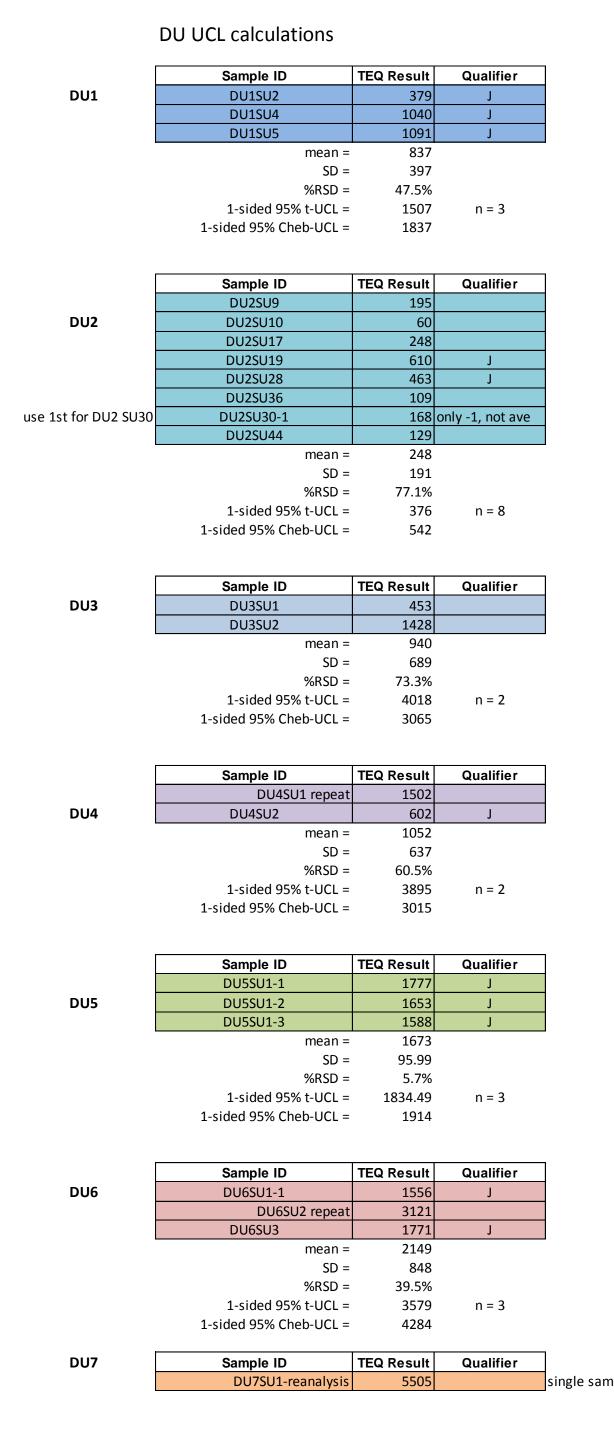


Table 1. Summary of the TCDD TEQ Concentrations from the Decision Unit Sampling.

				TCDD TEO	S-: C	- ((-)
				I COD TEQ	Soil Concentratio	n (pg/g) USEPA
Decision Unit	Decision Unit Name	Sampling Unit	Sample Number	Original Analysis	Re-Analysis	Analysis
1	Uncapped Area East	2	DU1SU2	379	NA NA	NA NA
1	Uncapped Area East	4	DU1SU4	1040	NA NA	NA
1	Uncapped Area East	5	DU1SU5	1105	NA	NA
2	Capped Area	9	DU2SU9	195	NA	NA
2	Capped Area	10	DU2SU10	60	NA	NA
2	Capped Area	17	DU2SU1 7	248	NA	NA
2	Capped Area	19	DU2SU19	610	NA	NA
2	Capped Area	28	DU2SU28	463	NA	288; 333ª
2	Capped Area	30	DU2SU30-1	168	NA	NA
2	Capped Area	30	DU2SU30-2	87	NA	NA
2	Capped Area	30	DU2SU30-3	321	NA	NA
2	Capped Area	36	DU2SU36	109	NA	NA
2	Capped Area	44	DU2SU44	128	NA	NA
3	Storm water Ditch North	1	DU3SU1-1 ^{b,c}	545	465	NA
3	Storm water Ditch North	1	DU3SU1-2 ^{b,c}	509	NA	NA
3	Storm water Ditch North	1	DU3SU1-3 ^{b,c}	522	NA	NA
3	Storm water Ditch North	2	DU3SU2 ^b	1644	1427	NA
4	Storm water Ditch South	1	DU4SU1 ^d	1859	1502	NA
4	Storm water Ditch South	2	DU4SU2	602	NA	NA
5	Berm Area	1	DU5SU1-1	1777	NA	1800; 1840°
5	Berm Area	1	DU5SU1-2	1653	NA	NA
5	Berm Area	1	DU5SU1-3	1588	NA	NA
6	Uncapped Area West	1	DU6SU1-1	1556	NA	NA
6	Uncapped Area West	1	DU6SU1-2	1568	NA	NA
6	Uncapped Area West	1	DU6SU1-3	2207	NA	NA
6	Uncapped Area West	2	DU6SU2°	2839	3121	NA
6	Uncapped Area West	3	DU6SU3	1771	NA	NA
7	Railroad Ditch	1	DU 7 SU1°	7 325	5506	8450; 8920 ^f

NA: Sample was not re-analyzed. a Results of EPA testing from samples DF6AO and DF6A4, respectively, for DU 2 SU 28. b Sample was re-analyzed using 1 g of sample instead of 30 g. c Only one sample was re-analyzed and not three replicates like the original sample. The re-analysis is paired with each of the replicate samples. d Sample was re-analyzed using an 5 - 10 times the internal standard.

a Results of EPA testing from samples DF6A02 and DF6A6, respectively, for DU 7 SU 1. recheck THEIR DU1 calcs 379

e Results of EPA testing from samples DF6AO1 and DF6A5, respectively, for DU 5 SU 1.

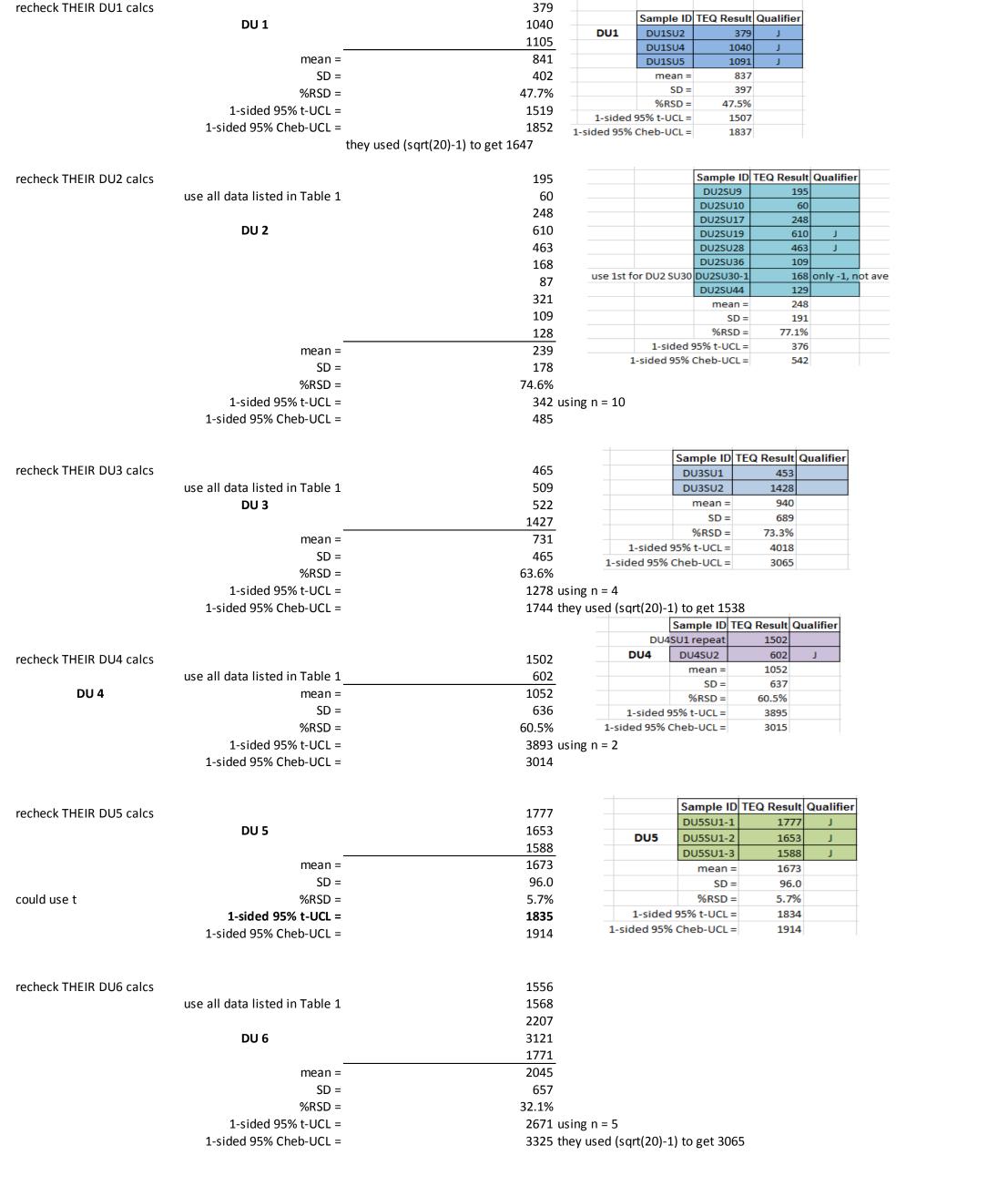
NC: Not calculated because the number of samples was <3.

		1040					
Table 4. Sun		1105	trations Used in Co	mparison with Industri	al and Maintenance We	orker Soil Screening	Levels for TCDD.
	mean =	841		•		ū	
	SD =	402					
	%RSD =	47.7%				T	
	1-sided 95% t-UCL =	1519	-				
:	1-sided 95% Cheb-UCL =	1852			Chebyshev 95%		
	Chebyshev 95% Up	per			Upper Confidence	Maximum	Adjusted
	Confidence Limit f	or Ma	ximum Unadjusted	Unadjusted Decision	Limit for Adjusted	Adjusted TEQ Soil	Decision Unit
	Unadjusted TEQ S	oil	TEQ Soil	Unit Concentration	TEQ Soil	Concentration	Concentration
Decision Uni	t Concentration (pg	/g) Co	ncentration (pg/g)	(pg/g) ^a	Concentration (pg/g)	(pg/g)	(pg/g) ^a
1	1647		1105	1105	759	547	547
2	435		610	435	231	332	231
3	1538		1427	1427	773	715	715
4	NC		1502	1502	NC	466	466
5	1865		1777	1777	678	636	636
6	3065		3121	3065	1145	1161	1145
7	NC		5506	5506	NC	1419	1419

a This value is the lower of the Chebyshev 95% UCL and the maximum concentration for the DU. Proposed Decision Unit Plan report dated April 29, 2014. For each Decision Unit with either more than 3 SUs or with at least one SU that had three incremental samples, the Chebyshev 95% upper confidence limit (UCL) of the mean for the Decision Unit was calculated using the following equation:

 $95\% UCL_{Chebyshev} = \bar{x} + \left(\int_{\alpha}^{1} -1 \right) * \frac{3L}{\sqrt{n}}$ they are using incorrect eqn.

Where \bar{x} is the average concentration for the DU, α is the Type I error and is set equal to 0.05 for a 95% confidence sqrt(20) - 1 = 3.472135955 limit, SD is the standard deviation, and N is the number of samples included. Table 4 presents the Chebyshev 95% sqrt(20-1) = 4.358898944 UCLs for each DU for which it could be calculated for both the unadjusted and adjusted TEQ concentrations.



recheck THEIR DU2 calcs 195

use only 1st for SU30 60

mean = 248

SD = 191

%RSD = 77.2%

1-sided 95% t-UCL = 376 using n = 8

mean = 946

SD = 680

%RSD = 71.9%

1-sided 95% t-UCL = 3983 using n = 2

1-sided 95% Cheb-UCL = 542

recheck THEIR DU3 calcs 465

1-sided 95% Cheb-UCL = 3043

recheck THEIR DU6 calcs 1556

use only 1st for SU1 3121

1-sided 95% Cheb-UCL = 4284

mean = 2149

SD = 848

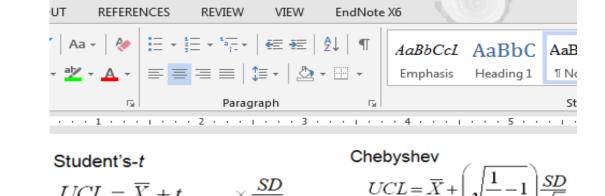
%RSD = 39.5%

1-sided 95% t-UCL = 3579 using n = 3

use only 1st for SU1

no calcs based on their data since only 1 SU sample See "SU7 data" sheet for comparison between theirs & EPA's "splits"

DU UCL calculations



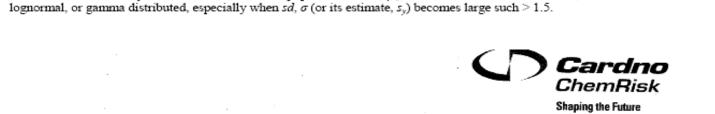
Arkwood memo DMC 19May14.docx - Word

EPA/600/R-07/041 September 2013 www.epa.gov ProUCL Version 5.0.00

Technical Guide A slight refinement of equation (2-45) is given (suggested by S. Ferson) as follows:

 $UCL = \bar{x} + \sqrt{((1/\alpha) - 1)} s_x / \sqrt{n}$ All versions of ProUCL computes the Chebyshev $(1 - \alpha)*100$ UCL of the population mean using equation (2-46). This UCL is labeled as Chebyshev (Mean, Sd) on the output sheets generated by ProUCL. Since this Chebyshev method requires no distributional assumptions, this is a nonparametric

method. This UCL may be used to estimate the population mean, μ_1 , when the data are not normal,



the clean cap.

Ms. Jean A. Mescher, Project Coordinator Director, Environmental Services McKesson Corporation One Post Street, 34th Floor

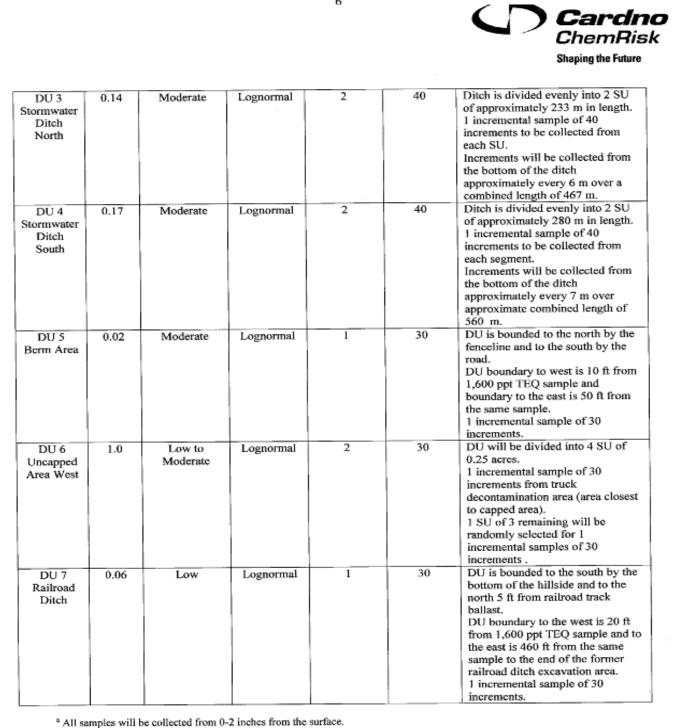
April 29, 2014

San Francisco, CA 94104

Revised Conceptual Site Model and Proposed Decision Unit Plan for the Arkwood, Inc. Site, Omaha, Arkansas; EPA ID# ARD084930148; Site ID: 0600124
 Decision
 Surface
 Expected
 Expected
 Number of Incremental
 Number of Increments

 Unit Name
 Area
 Heterogeneity
 Distribution
 Incremental
 Increments
 of Samples 2 SU will be randomly selected. 1 incremental sample of 30 increments will be collected from Heterogeneity expected to be low to moderate due to the lack of past site activities in this area.

DU will be divided into 44 SU of DU 2 11 Low Normal 7 5 SU will be randomly selected. 1 incremental sample of 30 increments from 4 SU. 3 incremental samples of 30 increments from 1 SU. Heterogeneity expected to be low because sampled soil will be from



compare EPA DU7 analyses to theirs

DF6A0 287 DU2 SU28

DF6A4 331

DF6A01 1835 DU5 SU1

-DI DF6A5 1779

-DI DF6A02 8385 DU7 SU1

-DI DF6A6 8714

55646	DE0100	200 40400 0	0.1	40,00,0044	45.04.00	Tarana I In a range	Zoo o			lan.	40,000,00044	E 5.	DF
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		1746-01- 2,3,7,8-TCDD	20.2	U		234	10/23/2014	E-DI	DF
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		40321-761,2,3,7,8-PeCDD	644	J			10/23/2014		DF
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	the state of the s	57653-851,2,3,6,7,8-HxCDD	10000				10/23/2014		DF
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		39227-281,2,3,4,7,8-HxCDD	2730				10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	the second secon	19408-741,2,3,7,8,9-HxCDD	5850		ng/kg		10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/05/2014		35822-4€ 1,2,3,4,6,7,8-HpCDD	449000		ng/kg		10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/05/2014		3268-87- OCDD	4560000		ng/kg		10/23/2014	the second secon	
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	The second second second second second	51207-312,3,7,8-TCDF	30.4	J	ng/kg	234	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		57117-411,2,3,7,8-PeCDF	66.0	U			10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		57117-312,3,4,7,8-PeCDF	224	J			10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	the state of the s	57117-441,2,3,6,7,8-HxCDF	1320				10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		72918-211,2,3,7,8,9-HxCDF	659	U	ng/kg		10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		70648-261,2,3,4,7,8-HxCDF	4840		ng/kg		10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		60851-342,3,4,6,7,8-HxCDF	800.	J	ng/kg		10/23/2014	the state of the latest decision of the lates	
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		67562-39 1,2,3,4,6,7,8-HpCDF	60600				10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	the second secon	55673-89 1,2,3,4,7,8,9-HpCDF	6830		ng/kg	1680	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		39001-02 OCDF	254000		ng/kg	2340	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	the state of the s	41903-57 Total TCDD	371		ng/kg	234	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		36088-22 Total PeCDD	2860				10/23/2014	the second section is a second section.	
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		34465-46 Total HxCDD	40800			1170	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		37871-00 Total HpCDD	685000		the state of the s	2110	10/23/2014	the second second second second	
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		55722-27 Total TCDF	437			234	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		30402-15 Total PeCDF	5090		-	1170	10/23/2014	the second second second second	
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		55684-94 Total HxCDF	65600			1170	10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		38998-75 Total HpCDF	282000		ng/kg		10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		2222-20- Total TEQ - Bird	4160				10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014		2222-21- Total TEQ - Fish	4680				10/23/2014		
DF6A0	DF6A02	320-10162-3	Soil	12/03/2014	15:21:00	3333-30- Total TEQ - Mammal	9990		ng/kg	0.000	10/23/2014	E-DU7	-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	1746-01-2,3,7,8-TCDD	78.3	J	ng/kg	233	10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	40321-7€ 1,2,3,7,8-PeCDD	686	J	ng/kg	1170	10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	57653-851,2,3,6,7,8-HxCDD	10700				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	39227-281,2,3,4,7,8-HxCDD	2870			1170	10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014		19408-741,2,3,7,8,9-HxCDD	6040			1170	10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/05/2014	04:08:00	35822-461,2,3,4,6,7,8-HpCDD			ng/kg	3840	10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/05/2014	04:08:00	3268-87- OCDD	4590000				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	51207-312,3,7,8-TCDF	68.3	J	ng/kg		10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014		57117-411,2,3,7,8-PeCDF	247	J			10/23/2014	E-DU7	7-SU1
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	57117-312,3,4,7,8-PeCDF	242	J			10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			57117-441,2,3,6,7,8-HxCDF	1280				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			72918-211,2,3,7,8,9-HxCDF	506	U			10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			70648-261,2,3,4,7,8-HxCDF	5780				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil		the second secon	60851-342,3,4,6,7,8-HxCDF	851	J			10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			67562-391,2,3,4,6,7,8-HpCDF	63200				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	and the second state of th	the state of the back of the state of the st	55673-891,2,3,4,7,8,9-HpCDF	6960				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014		39001-02 OCDF	260000				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	and the second second second second	41903-57 Total TCDD	441				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014		36088-22 Total PeCDD	2620				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	17:30:00	34465-46 Total HxCDD	43300				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	The second secon		37871-00 Total HpCDD	712000				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014		55722-27 Total TCDF	325				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	- Company of the Comp	30402-15Total PeCDF	4940				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	12/03/2014	and the last track and a department of the last	55684-94 Total HxCDF	135000				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil	the state of the s		38998-75 Total HpCDF	296000				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			2222-20- Total TEQ - Bird	4460				10/23/2014		
DF6A0	DF6A6	320-10162-6	Soil			2222-21- Total TEQ - Fish	5010				10/23/2014		
	DF6A6	320-10162-6	Soil	The second secon	the state of the s	3333-30- Total TEQ - Mammal	The state of the s				10/23/2014		

	DU7SU1	7325	J
DI	0U7SU1-reanalysis	5505	

Sample ID: DU7SU	1	350			550				EPA Me	thod 1613
Client Data Name: Oxfor Project: Arkw Date Collected: 23-Oc	T-777	Sample Data Matrix: Sample Size: % Solids:	Soil 32.4 g 88.7		Lab	ooratory Data Sample: Batch: e Analyzed:		Date Received: Date Extracted: 53 Column: DB-225 45 Column: ZB-5M:	21-Nov-2014 Analyst: CVG	9:22
Analyte Co	onc. (pg/g)	DL EM	PC	Qualifiers		Labeled Stan	dard	%0R	LCL-UCL	Qualifier
2,3,7,8-TCDD	35.2			D	IS	13C-2,3,7,8-T	CDD	56.3	25 - 164	D
1,2,3,7,8-PeCDD	526			D		13C-1,2,3,7,8	-PeCDD	66.9	25 - 181	D
1,2,3,4,7,8-HxCDD	2590			D		13C-1,2,3,4,7	S-HxCDD	43.3	32 - 141	D
1,2,3,6,7,8-HxCDD	8710			D		13C-1,2,3,6,7	S-HxCDD	51.1	28 - 130	D
1,2,3,7,8,9-HxCDD	4540			D		13C-1,2,3,7,8	9-HxCDD	51.4	32 - 141	D
1,2,3,4,6,7,8-HpCDD	332000			E, D		13C-1,2,3,4,6	7,8-HpCDD	61.0	23 - 140	D
OCDD	1820000			B, E, D		13C-OCDD		65.1	17 - 157	I, D
2,3,7,8-TCDF	20.4			D		13C-2,3,7,8-T	CDF	40.5	24 - 169	D
1,2,3,7,8-PeCDF	136			D		13C-1,2,3,7,8	-PeCDF	52.5	24 - 185	D
2,3,4,7,8-PeCDF	328			D		13C-2,3,4,7,8	-PeCDF	50.2	21 - 178	D
1,2,3,4,7,8-HxCDF	3340			D		13C-1,2,3,4,7	8-HxCDF	56.4	26 - 152	D
1,2,3,6,7,8-HxCDF	1020			D		13C-1,2,3,6,7	8-HxCDF	62.8	26 - 123	D
2.3.4.6.7.8-HxCDF	1640			D		13C-2,3,4,6,7	8-HxCDF	67.6	28 - 136	D
1,2,3,7,8,9-HxCDF	382			D		13C-1,2,3,7,8	9-HxCDF	88.2	29 - 147	D
1,2,3,4,6,7,8-HpCDF	45100			E, D		13C-1,2,3,4,6	7.8-HpCDF	66.4	28 - 143	D
1,2,3,4,7,8,9-HpCDF	5910			D		13C-1.2.3.4.7	8.9-HpCDF	66.3	26 - 138	D
OCDF	204000			E, D		13C-OCDF	2.21.2.20.5.20.00.00	57,1	17 - 157	D
				- 5775	CRS	37C1-2,3,7,8-7	CDD	64.9	35 - 197	D
						Toxic Equiva	lent Quotient (T	EQ) Data		
						TEQMinWHO		7330		
TOTALS										
Total TCDD	442						· ·			
Total PeCDD	2280									
Total HxCDD	35400									
Total HpCDD	486000									
Total TCDF	413	42	24							
Total PeCDF	4070	41	10	P						
Total HxCDF	44700	1000		p						
Total HpCDF	212000									

Sample ID: DU7SU	1	1.5		790				EPA Me	thod 16131
Project: Arkw	rd Environmental and Safety Inc. ood ct-2014 16:00	Sample Data Matrix: Soil Sample Size: 34.7 g % Solids: 88.7		La Q0	aboratory Data b Sample: C Batch: ate Analyzed:		Date Received: Date Extracted: 3 Column: ZB-5MS 5 Column: DB-225	21-Jan-2015 Analyst: WJL	
Analyte Co	onc. (pg/g)	DL EMPC	Qualifiers		Labeled Stan	dard	%oR	LCL-UCL	Qualifier
2,3,7,8-TCDD	36.4		D	IS	13C-2,3,7,8-T	CDD	66.7	25 - 164	D
1,2,3,7,8-PeCDD	471		D		13C-1,2,3,7,8	PeCDD	58.0	25 - 181	D
1,2,3,4,7,8-HxCDD	2500		D		13C-1,2,3,4,7	8-HxCDD	52.5	32 - 141	D
1,2,3,6,7,8-HxCDD	7760		D		13C-1,2,3,6,7	8-HxCDD	65.0	28 - 130	D
1,2,3,7,8,9-HxCDD	4170		D		13C-1,2,3,7,8	9-HxCDD	58.9	32 - 141	D
1,2,3,4,6,7,8-HpCDD	189000		D		13C-1,2,3,4,6	7,8-HpCDD	61.6	23 - 140	D
OCDD	1780000		E, D		13C-OCDD		58.8	17 - 157	D
2,3,7,8-TCDF	18.0		D		13C-2,3,7,8-T	CDF	69.1	24 - 169	D
1,2,3,7,8-PeCDF	140		D		13C-1,2,3,7,8	PeCDF	60.9	24 - 185	D
2,3,4,7,8-PeCDF	339		D		13C-2,3,4,7,8	PeCDF	61.9	21 - 178	D
1,2,3,4,7,8-HxCDF	3430		D		13C-1,2,3,4,7	8-HxCDF	60.0	26 - 152	D
1,2,3,6,7,8-HxCDF	1090		D		13C-1,2,3,6,7		70.1	26 - 123	D
2.3,4,6,7,8-HxCDF	1900		D		13C-2,3,4,6,7	8-HxCDF	70.4	28 - 136	D
1,2,3,7,8,9-HxCDF	517		D		13C-1,2,3,7,8	9-HxCDF	78.4	29 - 147	D
1,2,3,4,6,7,8-HpCDF	26300		D		13C-1,2,3,4,6	7,8-HpCDF	71.9	28 - 143	D
1,2,3,4,7,8,9-HpCDF	2860		D		13C-1,2,3,4,7	8,9-HpCDF	81.1	26 - 138	D
OCDF	127000		D		13C-OCDF	AL-LANA AL-HALL	63.5	17 - 157	D
2.000				CRS	37C1-2,3,7,8-1	CDD	80.6	35 - 197	D
					Toxic Equiva	lent Quotient (TE	Q) Data		
				1	TEQMinWHO	2005Dioxin	5510		
TOTALS				18					
Total TCDD	497	510							
Total PeCDD	2580								
Total HxCDD	38400								
Total HpCDD	312000								
Total TCDF	490								
Total PeCDF	5390		P						
Total HxCDF	56100	56300	P						
Total HpCDF	119000								